Effects of temperature and input energy on a quasi-three-level emission cross section of Nd3+:Yag pumped by a flashlamp

Abstract

The influence of temperature and input energy on the uorescence emission cross section of Nd3+:YAG crystal is studied. The stimulated emission cross sections of quasi-three-level systems are determined in a temperature range from 30 to 60 C and an input energy range from 18 to 75 J. The cross section is found to be decreased when the temperature and the input energy are increased. This is attributed to the thermal broadening mechanism of the emission line. This study is relevant for the development of laser design.